

What is claimed is:

1. An antibody specifically recognizing phosphatidylinositol-3,4,5-triphosphate.
2. An antibody of claim 1, wherein the antibody is a monoclonal antibody.
3. An antibody of claim 2, which recognizes an antigenic determinant comprising an inositol group and a glycerol backbone in phosphatidylinositol-3,4,5-triphosphate.
4. An antibody of claim 1, which is non-cross-reactive with phosphatidylinositol-4,5-diphosphate.
5. A variable region of immunoglobulin heavy chain specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 2 or an amino acid sequence of SEQ ID NO: 2 in which one or more amino acid residues have been substituted, deleted or added.
6. A variable region of immunoglobulin light chain specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 4 or an amino acid sequence of SEQ ID NO: 4 in which one or more amino acid residues have been substituted, deleted or added.
7. CDR1 in immunoglobulin heavy chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 5 or an amino acid sequence of SEQ ID NO: 5 in which one or more amino acid residues have been substituted,

deleted or added.

8. CDR2 in immunoglobulin heavy chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 6 or an amino acid sequence of SEQ ID NO: 6 in which one or more amino acid residues have been substituted, deleted or added.

9. CDR3 in immunoglobulin heavy chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 7 or an amino acid sequence of SEQ ID NO: 7 in which one or more amino acid residues have been substituted, deleted or added.

10. CDR1 in immunoglobulin light chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 8 or an amino acid sequence of SEQ ID NO: 8 in which one or more amino acid residues have been substituted, deleted or added.

11. CDR2 in immunoglobulin light chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 9 or an amino acid sequence of SEQ ID NO: 9 in which one or more amino acid residues have been substituted, deleted or added.

12. CDR3 in immunoglobulin light chains specifically binding to phosphatidylinositol-3,4,5-triphosphate, comprising an amino acid sequence shown by SEQ ID NO: 10 or an amino acid sequence of

SEQ ID NO: 10 in which one or more amino acid residues have been substituted, deleted or added.

13. An immunogen composition for use in producing an antibody specifically recognizing phosphatidylinositol-3,4,5-triphosphate, comprising a mixture of a dead Salmonella cell as an adjuvant and phosphatidylinositol-3,4,5-triphosphate.

14. A method for producing an antibody specifically recognizing phosphatidylinositol-3,4,5-triphosphate, which comprises immunizing an immunogen composition comprising a mixture of a dead Salmonella cell as an adjuvant and phosphatidylinositol-3,4,5-triphosphate.

15. An immunoassay method which comprises the steps of reacting the antibody specifically recognizing phosphatidylinositol-3,4,5-triphosphate or a variable region thereof with phosphatidylinositol-3,4,5-triphosphate present in a sample, and detecting the binding based on an immunological reaction between the antibody or a variable region thereof and the triphosphate.

16. An immunoassay method of claim 15, which comprises observing the degree to which the immunological reaction between the antibody or a variable region thereof and an antigenic determinant recognized thereby is inhibited by phosphatidylinositol-3,4,5-triphosphate present in a sample.

17. A kit for immunoassay for phosphatidylinositol-3,4,5-triphosphate comprising the antibody specifically recognizing

phosphatidylinositol-3,4,5-~~tri~~phosphate or a variable region thereof.

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